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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,869	01/24/2002	Hiroshi Nagasawa	NAGASAWA=7	5352
1444 7590 01/23/2007 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			EXAMINER FORMAN, BETTY J	
			ART UNIT	PAPER NUMBER
			1634	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/23/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/053,869

Applicant(s)

NAGASAWA, HIROSHI

Examiner

BJ Forman

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1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 16-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Status of the Claims***

1. This action is in response to papers filed 17 November 2006 in which claims 6-7 and 10-15 were canceled and claims 16-27 were added. The amendments have been thoroughly reviewed and entered.

The previous Office Action of 8 November 2006 is withdrawn in view of the suspension filed with the RCE of 18 August 2006.

The previous rejections in the Final Office Action dated 21 July 2005 are withdrawn in view of the cancelled claims.

Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the fact that the arguments address the cancelled claims. New grounds for rejection are discussed.

Claims 16-27 are under prosecution.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 is indefinite for the recitations "said contacting surfaces" and "spaced apart through-holes" because the recitations lack proper antecedent basis in Claim 16. The recitation is further indefinite because, lacking a previous definition of a substrate surface, it is unclear what surface of the substrate is being defined.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 16, 18-22, 47-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Stein et al (WO 99/59722, published 25 November 1999).

Regarding Claim 16, Stein et al discloses a probe chip comprising a plurality of stacked substrates in the form of a sheet (i.e. planar, Fig. 4), each having a plurality of through holes wherein the substrates are stacked to align the through-holes, a carriers filled in the through-holes, the carriers being relatively porous compared to the substrate and first and second probe molecules attached to first and second carriers in groups of through-holes (page 4, line 21-page 5, line 14, fig. 3-4 and 10) and wherein the first and second probe molecules are different (page 8, line 17-page 9, line 23).

Regarding Claim 18, Stein et al discloses the probe chip wherein the probe is selected from peptides and oligonucleotides (page 8, lines 19-21).

Regarding Claim 19 Stein et al disclose the probe chip wherein surfaces of the substrate are smooth (i.e. non-porous, page 9, lines 21-23). The claim further recites a liquid-tight relationship of aligned through-holes for adjacent substrates "so that liquid will not move laterally between said contacting surfaces to reach spaced apart through holes." Stein et al

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teach the probe chip wherein surfaces of the through-holes are non-porous. The surface of the through-hole, being a component of the substrate, provides a surface of the substrate. Hence, the non-porous surface of the reference is encompassed by the smooth surface as claimed. Furthermore, Stein et al teach the substrate provide a sealed arrangement between aligned through-holes so that reagents flow down the through-holes, the sealing prevents cross-contamination between through-holes and is provided by stacking plates and applying pressure (paragraph spanning pages 22-23). Because the only structural requirement of the claim is the smooth surface, because the reference teaches a non-porous surface and because the reference teaches the sealing between substrate prevents cross-contamination between through-holes, the reference anticipates the elements of the claim.

Regarding Claim 20, Stein et al disclose the probe chip wherein the substrates comprise a pair of sheets and the carriers comprise a porous material (i.e. mesh, (Fig. 7 and paragraph spanning pages 21-22).

Regarding Claim 21, Stein et al disclose the probe chip wherein the carrier is a glass fiber filter i.e. glass frit (page 26, lines 8-12) or porous glass i.e. 1 $\mu$ m beads (Fig. 10 and page 23, lines 10-page 25, line 11).

Regarding Claim 22, Stein et al disclose the reaction probe chip wherein the porous glass has a particle size of 1 to 100 microns (page 25, lines 1-3).

Regarding Claim 24, Stein et al disclose a reaction probe chip comprising a substrate having first and second through-holes; first and second carriers made of porous glass (page 24, lines 14-15) and having first and second probes attached (page 8, line 17-page 9, line 23) wherein the first and second through-holes filled with the first and second carriers (page 4, line 21-page 5, line 14, fig. 3-4 and 10).

Regarding Claim 25, Stein et al disclose the probe chip or Claim 20 wherein the substrate are plastic sheets (page 18, lines 10-11) and carriers comprise a porous sheet (mesh) sandwiched between the plastic sheets (Fig. 7 and paragraph spanning pages 21-22).

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Regarding Claims 26-27, Stein et al disclose the probe chip wherein the substrates are glass or plastic e.g. polyethylene (page 18, lines 10-19).

6. Claims 16, 18-21, 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Hess et al (U.S. Patent No. 6,716,629, filed 10 October 2001 having support in 60/239,538, filed 10 October 2000).

Regarding Claim 16, Hess et al discloses a probe chip comprising a plurality of stacked substrates in the form of a sheet (i.e. platen), each having a plurality of through holes wherein the substrates are stacked to align the through-holes (Column 17, lines 1-49), carriers filled in the through-holes, the carriers being relatively porous compared to the substrate (Column 22, lines 26-Column 23, line 6) and first and second probe molecules attached to first and second carriers in groups of through-holes wherein the first and second probe molecules are different (Column 13, line 65-Column 14, line 25 and Column 16, lines 35-42).

Regarding Claim 18, Hess et al discloses the probe chip wherein the probe is selected from DNA, RNA, oligonucleotides, antigens, antibodies, epitopes, enzymes, proteins and polypeptides (Column 14, lines 10-25).

Regarding Claim 19 Hess et al disclose the probe chip wherein surfaces of the substrate are smoothed (i.e. polished) so that liquid will not move laterally between surfaces to reach spaced apart through-holes (Column 18, lines 14-25).

Regarding Claim 20, Hess et al disclose the probe chip wherein the substrates comprise a pair of sheets (platens) and the carriers comprise a porous material (i.e. membrane, Column 34, lines 14-55).

Regarding Claim 21, Hess et al disclose the probe chip wherein the carrier is a glass fiber filter e.g. fiberglass or mesh glass fiber filter (Column 22, lines 27-51).

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Regarding Claim 24, Hess et al discloses a probe chip comprising a substrate having a plurality of through holes wherein the substrates are stacked to align the through-holes (Column 17, lines 1-49), carriers filled in the through-holes, the carriers being relatively porous compared to the substrate (Column 22, lines 26-Column 23, line 6) and first and second probe molecules attached to first and second carriers in groups of through-holes wherein the first and second probe molecules are different (Column 13, line 65-Column 14, line 25 and Column 16, lines 35-42).

Regarding Claim 25, Hess et al disclose the probe chip of Claim 20 wherein the substrate are plastic (Column 14, lines 29-30) and carriers comprise a porous sheet (membrane) sandwiched between the plastic sheets (Column 34, lines 14-55).

Regarding Claims 26, Hess et al discloses the probe chip wherein the substrates are glass or plastic (Column 14, lines 29-30).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 17 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al (WO 99/59722, published 25 November 1999) in view of Dusterhoft et al (WO 98/08954,

Regarding Claims 17 and 23, Stein et al discloses a probe chip comprising a plurality of stacked substrates, each having a plurality of through holes wherein the substrates are stacked to align the through-holes, a carrier filled in the through-holes wherein the carrier is porous relative to the substrate and probe molecules attached to the carrier (page 4, line 21-

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page 5, line 14), fig. 3-4 and 10) wherein the probe molecules attached to the surface of carriers in one groups are different from those in another group (page 8, line 17-page 9, line 23) wherein the porous glass has a particle size of 1 to 100 microns (page 25, lines 1-3) thereby meeting particle size limitations of the claims. Stein et al further teach the beads have perforations to provide greater surface area (page 24, lines 22-25) but is silent regarding the size of the perforation (i.e. pore size). However the claimed pore size of 0.1 to 0.5  $\mu\text{m}$  was well known in the art as preferred particles at the time the claimed invention was made as taught by Dusterhoft et al (Column 3, lines 38-40; Column 11, lines 41-60). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the preferred pore size taught by Dusterhoft et al to the particles of Stein et al et al based on the preferred teaching Dusterhoft et al (page 11, lines 58-60) and for the expected benefit of providing increased surface area as desired by Stein et al (page 24, lines 22-25).

9. Claims 17, 22-23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hess et al (U.S. Patent No. 6,716,629, filed 10 October 2001) in view of Dusterhoft et al (WO 98/08954,

Regarding Claims 17, 22-23 and 27, Hess et al discloses a probe chip comprising a plurality of stacked substrates in the form of a sheet (i.e. platen), each having a plurality of through holes wherein the substrates are stacked to align the through-holes (Column 17, lines 1-49), carriers filled in the through-holes, the carriers being relatively porous compared to the substrate (Column 22, lines 26-Column 23, line 6) and first and second probe molecules attached to first and second carriers in groups of through-holes wherein the first and second probe molecules are different (Column 13, line 65-Column 14, line 25 and Column 16, lines 35-42). Hess et al further teach the carriers are porous beads (Column 23, lines 1-5) and the



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preferred substrate is plastic (Column 14, lines 29-30) but the reference is silent regarding the size of the beads, the bead pore size and specific plastics.

However the claimed beads and pore size were well known in the art as preferred particles at the time the claimed invention was made as taught by Dusterhoft et al (Column 3, lines 38-40; Column 11, lines 41-60). Furthermore, Dusterhoft et al teach preferred plastic substrates are made of polyethylene or polyester (Column 8, lines 25-33). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the preferred plastics and beads taught by Dusterhoft et al to the probe chip of Hess et al et al. One of ordinary skill in the art would have been motivated to do so based on the preferred teaching Dusterhoft et al (Column 14, lines 29-30 Column 8, lines 25-33).

#### **Conclusion**

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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BJ Forman, Ph.D.  
Primary Examiner  
Art Unit: 1634  
January 18, 2007